ML

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,959	01/16/2004	Timothy E. Ostromek	46030/P045US/10407184	8182

29053 7590 04/03/2007

DALLAS OFFICE OF FULBRIGHT & JAWORSKI L.L.P.
2200 ROSS AVENUE
SUITE 2800
DALLAS, TX 75201-2784

EXAMINER	
CUTLER, ALBERT H	
ART UNIT	**PAPER NUMBER**
2622	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

Office Action Summary	Application No.	Applicant(s)	
	10/759,959	OSTROMEK ET AL.	
	Examiner	Art Unit	
	Albert H. Cutler	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This office action is responsive to application 10/759,959 filed on January 16, 2004. Claims 1-20 are pending in the application and have been examined by the examiner.

Information Disclosure Statement

2. The Information Disclosure Statements (IDS) mailed on January 16, 2004 and April 11, 2005 were received and have been considered by the examiner.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 13-18 define a logic embodying functional descriptive material. However, the claims do not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of the technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed logic embodied on a medium can range from a paper on which the program is

written to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody a program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 4, 5, 7, 10, 11, 13, 16, 17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Daly(European Patent Application Publication EP 1,051,045).

Consider claim 1, Daly teaches:

A method for generating an image(paragraphs 0042-0045), comprising:

Receiving light associated with a plurality of spectral bands(A scene(i.e. light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

Repeating the following for each spectral band associated with the light:

receiving an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

changing an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e. an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e. filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmitting the spectral band to a sensor(90, see figure 8, paragraph 0042);

sensing the spectral bands at the sensor(paragraph 0042);

combining the spectral bands to generate a composite signal(The spectral bands are combined by the field to frame combiner(118), figure 8, paragraph 0042.); and

generating an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

Consider claim 4, and as applied to claim 1 above, Daly further teaches:

combining the spectral bands to generate the composite signal(see claim 1 rationale) comprises:

accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116) to produce noise free images(i.e. a

function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e. functions of the original images) are provided to(i.e. accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(The spectral bands are multiplexed by the field-to-frame combiner(118) in order to combine all the bands(i.e. fields) into a composite signal(i.e. frame), column, line 57 through column 12, line 5.).

Consider claim 5, and as applied to claim 1 above, Daly further teaches:

the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.).

Consider claim 7, Daly teaches:

A system for generating an image(see figure 8, paragraphs 0042-0045), comprising:

a electro-optical element("active color filter", 84, figure 8) operable to:

receive light associated with a plurality of spectral bands(A scene(i.e. light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

repeat the following for each spectral band associated with the light:

receive an electrical signal(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

change an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e. an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e. filters for different spectral bands) including B, Y, and R color components, paragraph 0042.);

and transmit the spectral band to a sensor(90, see figure 8, paragraph 0042);

a sensor coupled to the electro-optical element and operable to sense the spectral bands(90, see figure 8, paragraph 0042);

an image processing module coupled to the sensor and operable to combine the spectral bands to generate a composite signal(The spectral bands are combined into a composite signal by the field to frame combiner(118), figure 8, paragraph 0042.); and

a display module coupled to the image processing module and operable to generate an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

Consider claim 10, and as applied to claim 7 above, Daly further teaches:

the image processing module combines the spectral bands to generate the composite signal(see claim 7 rationale) by:

accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116) to produce noise free images(i.e. a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e. functions of the original images) are provided to(i.e. accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(The spectral bands are multiplexed by the field-to-frame combiner(118) in order to combine all the bands(i.e. fields) into a composite signal(i.e. frame), column, line 57 through column 12, line 5.).

Consider claim 11, and as applied to claim 7 above, Daly further teaches:

the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.).

Consider claim 13, Daly teaches:

A logic for generating an image(Paragraphs 0042-0045 describe logic for generating an image.), the logic embodied in a medium(The circuit of figure 8 is a medium which embodies the logic of paragraphs 0042-0045.) operable to:

Receive light associated with a plurality of each spectral bands(A scene(i.e. light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

Repeat the following for each spectral band associated with the light:

Receive an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

change an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e. an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e. filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmit the spectral band to a sensor(90, see figure 8, paragraph 0042);

sense the spectral bands at the sensor(paragraph 0042);

combine the spectral bands to generate a composite signal(The spectral bands are combined into a composite signal by the field to frame combiner(118), figure 8, paragraph 0042.); and

generate an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

Consider claim 16, and as applied to claim 13 above, Daly further teaches:

The logic(see claim 13 rationale) is operable to combine the spectral bands to generate the composite signal by:

accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116) to produce noise free images(i.e. a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e. functions of the original images) are provided to(i.e. accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(The spectral bands are multiplexed by the field-to-frame combiner(118) in order to combine all the bands(i.e. fields) into a composite signal(i.e. frame), column, line 57 through column 12, line 5.).

Consider claim 17, and as applied to claim 13 above, Daly further teaches:

the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.).

Consider claim 19, Daly teaches:

A system for generating an image(see figure 8, paragraphs 0042-0045), comprising:

means for receiving light associated with a plurality of spectral bands(A scene(i.e. light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

means for repeating the following for each spectral band associated with the light:

receiving an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

changing an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e. an optical property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e. filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmitting the spectral band to a sensor(90, see figure 8, paragraph 0042);

means for sensing the spectral bands at the sensor(paragraph 0042);

means for combining the spectral bands to generate a composite signal(The spectral bands are combined into a composite signal by the field to frame combiner(118), figure 8, paragraph 0042.); and

means for generating an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 2, 3, 8, 9, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view of Wagner(U.S. Patent 5,528,295).

Consider claim 2, and as applied to claim 1 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different layers sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 3, and as applied to claim 1 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different

spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 8, and as applied to claim 7 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different layers sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical

signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 9, and as applied to claim 7 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line

5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 14, and as applied to claim 13 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different layers sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

Consider claim 15, and as applied to claim 13 above, Daly teaches an electro-optical element for filtering and transmitting different spectral bands(84, figure 8, see claim 1 rationale).

However, Daly does not explicitly teach that the electro-optical element comprises different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

9. Claims 6, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view of Tanaka et al.(U.S. Patent 6,674,106).

Consider claim 6, and as applied to claim 1 above, Daly further teaches:

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, Daly does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Tanaka et al. is similar to Daly in that an electro-optical element(region II, figure 1, column 7, line 66 through column 8, line 1) is used to filter light into different spectral bands(column 8, lines 54-62).

However, in addition to the teachings of Daly, Tanaka et al. teach that the display electrical signal for each of the bands is sent to a display electro-optical element(region II, figure 1, column 7, line 66 through column 8, line 1);

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band(The electro-optical element includes a variety of films(i.e. films with changed optical properties) adjusting the transmission of different spectral bands for an input signal(i.e. display electrical signal), column 8, lines 54-62.); and

transmitting the display spectral band to a display(The electro-optic element emits light(i.e. transmits spectral bands) through a base plate(i.e. display).); and

displaying the display spectral bands at the display to generate the image(The display spectral bands are displayed as an image using pixels that are illuminated via a backlight source and displayed on a glass plate, column 7, line 63 through column 8, line 16).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to generate the image from the composite signal taught by Daly using an electro-optical element and display as taught by Tanaka et al. in order to avoid undesired interference phenomena, and prevent the loss of transmitted light(Tanaka et al., column 3, line 64 through column 4, line 5).

Consider claim 12, and as applied to claim 7 above Daly further teaches:

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, Daly does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Tanaka et al. is similar to Daly in that an electro-optical element(region II, figure 1, column 7, line 66 through column 8, line 1) is used to filter light into different spectral bands(column 8, lines 54-62).

However, in addition to the teachings of Daly, Tanaka et al. teach that the display electrical signal for each of the bands is sent to a display electro-optical element(region II, figure 1, column 7, line 66 through column 8, line 1);

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band(The electro-optical element includes a variety of films(i.e. films with changed optical properties) adjusting

the transmission of different spectral bands for an input signal(i.e. display electrical signal), column 8, lines 54-62.); and

transmitting the display spectral band to a display(The electro-optic element emits light(i.e. transmits spectral bands) through a base plate(i.e. display).); and

displaying the display spectral bands at the display to generate the image(The display spectral bands are displayed as an image using pixels that are illuminated via a backlight source and displayed on a glass plate, column 7, line 63 through column 8, line 16).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to generate the image from the composite signal taught by Daly using an electro-optical element and display as taught by Tanaka et al. in order to avoid undesired interference phenomena, and prevent the loss of transmitted light(Tanaka et al., column 3, line 64 through column 4, line 5).

Consider claim 18, and as applied to claim 13 above Daly further teaches:

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, Daly does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Tanaka et al. is similar to Daly in that an electro-optical element(region II, figure 1, column 7, line 66 through column 8, line 1) is used to filter light into different spectral bands(column 8, lines 54-62).

However, in addition to the teachings of Daly, Tanaka et al. teach that the display electrical signal for each of the bands is sent to a display electro-optical element(region II, figure 1, column 7, line 66 through column 8, line 1);

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band(The electro-optical element includes a variety of films(i.e. films with changed optical properties) adjusting the transmission of different spectral bands for an input signal(i.e. display electrical signal), column 8, lines 54-62.); and

transmitting the display spectral band to a display(The electro-optic element emits light(i.e. transmits spectral bands) through a base plate(i.e. display).); and

displaying the display spectral bands at the display to generate the image(The display spectral bands are displayed as an image using pixels that are illuminated via a

backlight source and displayed on a glass plate, column 7, line 63 through column 8, line 16).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to generate the image from the composite signal taught by Daly using an electro-optical element and display as taught by Tanaka et al. in order to avoid undesired interference phenomena, and prevent the loss of transmitted light(Tanaka et al., column 3, line 64 through column 4, line 5).

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daly in view of Wagner, and further in view of Tanaka et al.

Consider claim 20, Daly teaches:

A method for generating an image(paragraphs 0042-0045), comprising:

Receiving light associated with a plurality of spectral bands(A scene(i.e. light associated with a plurality of spectral bands) is captured via optics and passed to a color filter, paragraph 0042.);

Repeating the following for each spectral band associated with the light:

receiving an electrical signal at an electro-optical element(An electro-optical element("active color filter", 84, figure 8) receives an electric signal from a field control clock(86), paragraph 0042.);

changing an optical property of the electro-optical element in response to the electrical signal to filter for a spectral band(The spectral transmission(i.e. an optical

property) of the electro-optical element(84) is changed in response to the signal from the field control clock(86), paragraph 0042. The electro-optical component(84) creates a color component set(i.e. filters for different spectral bands) including B, Y, and R color components, paragraph 0042.); and

transmitting the spectral band to a sensor(90, see figure 8, paragraph 0042);

sensing the spectral bands at the sensor(paragraph 0042), the sensor(90) is synchronized with the electro-optical element(84), the sensor(90) being operable to sense a spectral band when the spectral band arrives at the sensor from the electro-optical element(The sensor(90) and electro-optical element(84) are synchronized by both being connected to the color field control clock(86). See figure 8, column 11, paragraph 0042.);

combining the spectral bands to generate a composite signal(The spectral bands are combined by the field to frame combiner(118), figure 8, paragraph 0042.); and

generating an image from the composite signal(A color reproduction processor(120) generates an image based on the composite signal, paragraphs 28, 29, and 42.).

combining the spectral bands to generate the composite signal by accessing a function of the spectral bands(The spectral bands are passed through filters(106, 108, 110, 122, 114, and 116) to produce noise free images(i.e. a function of the spectral bands is obtained), column 11 lines 49-58. Those noise free images(i.e. functions of the original images) are provided to(i.e. accessed by) the field-to-frame combiner(118), column 11, line 57 through column 12, line 5.); and

multiplexing the spectral bands in accordance with the function to combine the spectral bands(The spectral bands are multiplexed by the field-to-frame combiner(118) in order to combine all the bands(i.e. fields) into a composite signal(i.e. frame), column, line 57 through column 12, line 5.).

Receiving the composite signal(The composite signal is received by the color reproduction processor(120), column 11, line 57 through column 12, line 5, see figure 8.), the composite signal associated with a plurality of display spectral bands(The composite signal is associated with the Y, U, and V bands combined in the field-to-frame combiner(118), column 11, line 42 through column 12, line 5.). Daly further teaches that the color signal produced is transmitted to different devices, column 12, lines 3-5.

However, Daly does not explicitly teach that the electro-optical element has different layers sensitive to different spectral bands, or different sections sensitive to different spectral bands.

Wagner is very similar to Daly in that light is passed from a lens assembly(12, figure 1) through an electro-optical filter arrangement(18, figure 1) to an image sensor(28 and 30, figure 1). See column 3, line 31 through column 7, line 4.

However, in addition to the teachings of Daly, Wagner teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first layer(20, figure 1) sensitive to a first spectral band of the spectral bands(The first layer(20) is tunable to transmit different spectral bands, column 5, line 5

through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second layer(22, figure 1) sensitive to a second spectral band of the spectral bands(The second layer(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Wagner also teaches that the electro-optical element(18, figure 1, column 3, lines 32-36) comprises:

a first section (20, figure 1) sensitive to a first spectral band of the spectral bands(The first section(20) is tunable to transmit different spectral bands, column 5, line 5 through column 6, line 31. The spectral band transmitted is based on the applied voltage, column 5, lines 64-66. See also figure 2.); and

a second section(22, figure 1) sensitive to a second spectral band of the spectral bands(The second section(22) is configured to transmit a different transmission spectrum than the first, column 6, line 32 through column 7, line 4, see figure 3.), the electrical signal operable to activate the first layer and to activate the second layer(column 3, lines 60-65).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include first and second layers sensitive to different spectral bands as taught by Wagner in the electro-optical element taught by Daly for the benefit of creating a more dynamic filter configuration(Wagner, column 2, lines 61-63) in

which an optimum color can be produced due to the variety of spectral responses obtained(Wagner, column 6, lines 60-65).

However, the combination of Daly and Wagner does not explicitly teach that the display electrical signal for each of the bands is sent to a display electro-optical element;

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band; and

transmitting the display spectral band to a display; and

displaying the display spectral bands at the display to generate the image.

Tanaka et al. is similar to Daly in that an electro-optical element(region II, figure 1, column 7, line 66 through column 8, line 1) is used to filter light into different spectral bands(column 8, lines 54-62).

However, in addition to the teachings of Daly, Tanaka et al. teach that the display electrical signal for each of the bands is sent to a display electro-optical element(region II, figure 1, column 7, line 66 through column 8, line 1);

changing an optical property of the display electro-optical element in response to the display electrical signal to filter for a display spectral band(The electro-optical element includes a variety of films(i.e. films with changed optical properties) adjusting the transmission of different spectral bands for an input signal(i.e. display electrical signal), column 8, lines 54-62.); and

transmitting the display spectral band to a display(The electro-optic element emits light(i.e. transmits spectral bands) through a base plate(i.e. display).); and

displaying the display spectral bands at the display to generate the image(The display spectral bands are displayed as an image using pixels that are illuminated via a backlight source and displayed on a glass plate, column 7, line 63 through column 8, line 16).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to generate the image from the composite signal taught by the combination of Daly and Wagner using an electro-optical element and display as taught by Tanaka et al. in order to avoid undesired interference phenomena, and prevent the loss of transmitted light(Tanaka et al., column 3, line 64 through column 4, line 5).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5,004,323, US 5,812,106, and US 6,426,810 teach of electro-optic display devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert H. Cutler whose telephone number is (571)-270-1460. The examiner can normally be reached on Mon-Fri (7:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu can be reached on (571)-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER